Table of Contents

Estimating The Impact Of Satellite Digital Audio Radio Service On The Existing Radio Market By Product Analogy and Consumer Demand Analysis

Overview

With the Federal Communication Commission's decision to allocate spectrum in the 2310-2360 MHz (S-band) for satellite digital audio radio services (DARS), delivery of digital audio services by satellite to consumers across the country seems a step closer. Terming its action as "consistent with the 1992 World Administrative Radio Conference, which allocated the band to the U.S. for the broadcast satellite service," the FCC said that the allocation is the first step toward providing the American public with new multichannel, multiformat digital radio services with sound quality equivalent to compact discs on a nationwide or regional basis. Predictions are that DARS providers could be broadcasting by the end of the decade (Haber, 1995).

The impact of a new service into the existing radio market poses concerns for consumers, regulators, broadcasters, manufacturers, and distributors of radio services. Many comments from all sides have been made in official documents, reports, and the trade press about the potential impact of DARS upon the future of the radio industry. Very little information, however, has been produced to elicit the impact of this innovative product upon consumers, and vice versa.

In particular, almost no information describing consumers' reactions to DARS product attributes has surfaced in the debate. After all, it will be consumers that will have to evaluate DARS and decide whether or not the service is worth their time and

money. The DARS attributes of "CD-quality sound," "digital delivery" and "commercial-free music," have been used often to describe the service. However, consumer reaction to these attributes has not been described. These three attributes alone appear to be positively related to the potential adoption of DARS by consumers, according to the many trade press articles on DARS. Will this relationship take place? Should the FCC, DARS providers, and the terrestrial radio industry take this relationship for granted? In an effort to further describe the potential relationship between DARS and consumers, it is necessary to establish a product attribute framework for analysis.

The purpose of this paper is to provide this consumer-oriented framework as a method of examining the potential impact of DARS upon the radio industry. Once such a framework is used, realistic predictions of the potential impact of DARS can be made. This scenario is similar to the current development of the DSS. By applying the same methodology used to examine the adoption potential for a satellite-delivered digital video service (the DSS) to the study of the adoption potential for a satellite-delivered digital audio service (DARS), a better understanding of the potential impact of DARS can be obtained.

The key is for the DARS providers to evaluate these product attributes in terms of the consumer. DSS providers have succeeded in this evaluation, and have significant numbers of DSS users. If DARS providers can do the same, *the listener base for terrestrial radio could be diminished significantly,* especially in those markets where there is little variety in the type and number of program formats.

Consumer Research and Technology Innovations

The success of innovative products depends as much on consumer acceptance as on technological factors. Acceptance, or adoption, of innovative products is necessarily influenced by consumers' purchase intentions which, in turn, are determined by certain general product attributes. A substantial amount of research literature has examined factors affecting the success of innovative products, such as the product life cycle, competitive pressures, patents, environmental elements, and R&D funding. Considerable effort also has been devoted to predicting the success of new product introductions. However, surprisingly little research has appeared that suggests how to incorporate consumers' reactions to new product attributes into usable forecasts of innovative product acceptance and market share.

Gatignon and Robertson (1985), in their interdisciplinary summary of innovation research, noted that consumer researchers have paid little attention to innovation attributes and suggested several areas for possible future research. They identified consumer technology innovations, which would include DARS, as a product classification particularly in need of further study.

Consumer Acceptance of Satellite Delivered Services

Since this 1985 study, only a few articles have appeared in the research literature which follow Gatignon and Robertson's advice. Yet, no articles dealing

specifically with new communication innovations were located. Most of the research centered around the easier to complete and analyze areas mentioned above. In late 1992, seeking to provide a genuine contribution to the field of broadcasting and mass communication research, this researcher decided to follow Gatignon and Robertson' call for needed research in the area of product attributes and consumer technology innovations (Carlin, 1995). The topic of the research project is the Digital Satellite System (DSS) manufactured by RCA and marketed and distributed by DirecTV and USSB. In 1992, DARS was still a concept without FCC authorization or official spectrum space. The DSS, on the other hand, was on the verge of launching itself as a new competitor for TV viewers.

Forecasting Impact By Analogy and Demand Analysis

By applying the methodology used to examine the adoption potential for a satellite-delivered digital video service (the DSS), to the study of the adoption potential for a satellite-delivered digital audio service (DARS), a better understanding of the potential impact of DARS can be obtained. According to Klopfenstein (1989), analogy, accompanied by consumer demand analysis, should be used to forecast the adoption of home information products and services. It does not "guarantee a clear crystal ball," but it does provide a realistic method of appraising the factors involved in a new product's adoption.

The DSS study broke down product attributes into two categories based on product diffusion theory (Rogers, 1986): *objective attributes* and *perceived attributes*.

Objective attributes include price, type of program choices, number of program choice, size of satellite dish, and size of converter box. Perceived attributes include *relative advantage* versus existing products, *compatibility* of the new product, *complexity* of the new product, *trialability* of the new product, *communicability* of the new product, *perceived risk* of the new product, and *essentiality* of the new product. All of these attributes can be examined through analogy as they relate to DARS.

Objective Attributes of DARS

Price

The DSS study shows that price is inversely related to adoption potential. A key price factor is that as the price goes up, the potential for adoption decreases. DARS providers will have to establish prices low enough to attract potential listeners. Potential DSS users were able to directly compare DSS program prices to similar cable TV program prices. What can potential DARS users compare its price to? Marketing will play a big role in the "selling of a new service," as DARS providers try to offer comparisons to existing audio products and services.

Another price factor would be the separation of program and hardware fees. Will consumers pay for a separate DARS receiver, and how much? Will the DARS service be bundled together similar to cable TV and Primestar?

A third price factor would be pricing strategy. Will DARS be available as a complete package, as a set of program tiers, and/or a la carte?

Program Choices

Crucial to the success of the DSS was the availability of many program options. Consumers directly associated program choices with value for their investment in a $700 video system. A key relationship to analyze for DARS would be the variety of choices needed by consumers to establish a sense of value for the system.

Program Amounts

Not as crucial as choice, the amount of programs available was also an important variable for consumers, especially within viewing categories in DSS adoption. For example, sports viewers desired a large number of options to satisfy their viewing needs, such as 8 or 9 baseball games at one time. Therefore, the amount of channels available in the system to give a consumer a wide variety of choice was important to many consumers. For DARS, country music fans, for example, may want a number of country music programs available from DARS, especially if they only have one "good" country radio station in their area.

DARS Equipment

The size of the DSS equipment was an important variable because of consumers' location (apartments, suburbs), zoning restrictions, and appearance of the satellite dish. The converter box, designed to be the size of a VCR, was also a necessary requirement for adopters. Since the DSS equipment was marketed as consumer electronics equipment, just like a TV, VCR, or boom box, consumers expected to receive DSS equipment which looked and performed like these items. The DSS was not marketed like traditional C-band gear, partly because many consumers were unfamiliar with the older technology.

Perceived Innovation Attributes of DARS

These attributes are often overlooked in research involving innovations (Holak & Lehmann, 1990). The DSS study was able to show that a more detailed picture of consumers' reactions to a new product can be produced through the examination of these attributes.

Relative Advantage

Potential DSS users were able to compare the DSS to their past experiences with other video delivery systems in a number of areas:

- Quality,
- Service,
- Reliability,
- Program choice,
- Price,
- Value.

As a digital technology, the DSS was expected to provide more choices, better quality and value. Consumers were more skeptical about reliability and quality of such a new product. Program choice and quality of the digital signal were strong motivators for potential adoption based on consumers' current viewing options (or lack of options).

For DARS, the key areas to examine will be the:

- advantages of the digital signal,
- choices and amount of program options,
- existence of commercials
- existence of voice talent, the price,
- equipment needed, and
- availability of the DSS as compared to existing audio services.

Comparisons should be made to include terrestrial radio stations, CDs and cassettes, music video channels, DMX, and Music Choice.

Compatibility

For the DSS, compatibility was an important attribute. Potential adopters saw the DSS as compatible part of their daily routine. The ability of the DSS to provide a wide variety of program options at consumers' convenience was important, especially for viewers of feature films, sports, and PPV.

For DARS, compatibility will likely be a very important attribute to examine. Since the majority of terrestrial radio listening occurs in the car, DARS will have to provide service in vehicles to gain a profitable number of consumers. Availability in the home is not going to be nearly as important because of the number of other activities and products being used by consumers there. If only available in the home, DARS would have to supplant TV, music video, and home stereo equipment as a primary audio source. This is a possibility, but is this compatible with the way consumers use audio at home? Would they have to pay extra for receivers in various rooms? in their vehicles?

There is some recent evidence that some consumers are considering digital audio services a compatible option at home. Music Choice has added more than half-a-million DirecTV subscribers in the last 8 months. As part of the DSS basic package, Music Choice has been able to "equal the value of any service in its [DirecTV's] entire

program package" (Beacham, 1995). Since the programming and the equipment are contained within the DSS package, consumers are finding Music Choice a compatible entertainment option. However, this may or may not be the case when DARS services are sold separately.

As for compatibility in the automobile, DARS will have to espouse the virtues of its programming options and digital signal. To be truly compatible in a vehicle, DARS will have to provide terrestrial radio services like weather, traffic, news and information. Without these services, DARS can never be compatible with the majority of automobile radio listeners.

As mentioned by Klopfenstein (1989), innovative products can act as a substitute, an alternative, and/or a complimentary product for existing products. With the DSS, this concept directly relates to the compatibility of the DSS to the individual consumer. For example, the DSS cannot provide local TV stations or broadcast TV networks to the majority of potential adopters. Some consumers may decide these stations are more important than investing hundreds of dollars into a service that cannot provide them. Other consumers may decide that they can receive these stations via an antenna or cable system, while using the DSS as a complementary service to receive other signals. Still other consumers may decide that local or network TV are not important and would rather use the DSS as an alternative service to receive programs more compatible to their viewing habits.

In the case of DARS, consumers may find it more compatible to listen to their chosen programming via DARS (or cassette or CD), than to listen to terrestrial radio for

various program choices interrupted by commercials over which they have no control. Traffic and weather reports are going to be important content material for terrestrial radio stations during drive times. DARS would have a difficult, if not impossible, time providing individual market traffic reports. Consumers can already get weather from The Weather Channel on cable or the DSS at home, but rely on the radio for up-to-the-minute weather in their vehicles. Will consumers merely switch on their local station for these personal service items, and then return to DARS for programming they can partly control? Depending on the variables (price, program choice, etc.) already discussed, the answer is "Yes." Many consumers already do the same thing with their vehicle's cassette and CD players. The key is for DARS to provide compatible programming for consumers while they are in their vehicles. This will include not only music, but news, talk, and sports. If these options are not included, DARS vehicle usage may suffer substantially.

Complexity

For the DSS, complexity was inversely related to the potential adoption of the system. The more complex consumers perceived the DSS, the less likely they were to potentially purchase it. This should be the same scenario for DARS. As evidenced by the success of Music Choice on the DSS, if a digital audio service is packaged wisely, it can be adopted successfully. DARS providers should follow a similar marketing and distribution procedure as the DSS to ensure that consumers perceive DARS as a

consumer electronic device that can be easily installed and operated with user-friendly equipment (including a remote control device, a 1-800 help line, local retailer support, etc.). This should be accomplished while also extolling the virtues of state-of-the-art technology and CD-quality sound. By using customer-friendly terms and back-up support, DARS can avoid being perceived as too complex. This procedure is being used wisely by the DSS providers, and by home computer retailers/providers as well.

Trialability

The DSS uses in-store demonstrations to let consumers experience the system first-hand. This is an important concept because of the overwhelming number of consumer electronic products available at retailers today. Consumers seemed much more willing to adopt the DSS if they could try it out first. This is similar to Blockbuster Video's technique of showing movies or playing CDs for customers to experience as they make their purchase (or rental) decisions. The use of warranties, no hassle return policies, contests, and trial periods were also deemed important by the DSS study. It would be wise for DARS providers to follow the same procedures.

Communicability

The ability to tell friends and neighbors about the DSS experience was not an important variable. It was helpful for consumers to be able to talk with knowledgeable sales and service personnel, including the use of in-store salespeople, an 800 service and information number, and product description guides with up-to-date prices and options. DARS should also depend less on word-of-mouth advertising, and focus more on well-planned and organized demonstration stations, infomercials, product description guides, and well-trained sales staffs to ensure consumer interest and peace-of-mind.

Perceived Risk

With the DSS, perceived risk was a very important attribute for consumers. Because of the high price and purchase-only option involved with the DSS, consumers were wary of adopting without having some guarantees in terms of return policy, warranties, and potential to deliver what it promised. The demonstration stations and toll-free information numbers were very helpful to lessen these concerns. The ability of the DSS to provide recognizable program options from cable TV also demonstrated that the DSS was able to provide proven material.

DARS will have to provide the same type of risk alleviating practices to ensure consumer acceptance. Providing familiar music industry names and companies, on-air talent, and customer service will be very important to the success of DARS.

Essentiality

A number of factors relate to this concept, including market location, the need for personal service items while driving, and consumer listening habits. DARS providers must be able to determine if their product is essential to consumers during their day. Essentiality is strongly related to compatibility. DARS may be essential if there are no radio stations in a consumer's market which program what the consumer wants to hear, or if a consumer would rather listen to non-stop music without interruptions.

Scenario for the Potential Adoption of DARS

The key to establishing a scenario for the impact of DARS on the radio industry is to determine how consumers are going to perceive both the objective and subjective attributes of DARS. Will DARS be a substitute, complementary, or alternative technology for terrestrial radio according to consumers? If consumers perceive DARS as a substitute for terrestrial radio, both at home and in vehicles, the adoption potential

for DARS could be very high. But if consumers perceive DARS as a complementary or alternative service to radio, the adoption potential would depend on the ability of the DARS provider to position DARS as a compatible, or even as an essential service.

The most likely scenario, according to the published and reported plans for DARS, is for DARS to be a complementary service to terrestrial radio. If current reports hold true, DARS will be a commercial-free, subscription-based, music and niche programming service. Consumers would have to purchase the receiver and the programming from DARS distributors or retail outlets, and would use it in addition to their local radio stations. Consumers would still have to obtain local news and information, traffic, and weather reports from other sources such as local radio. This scenario would limit the compatibility of the DARS system for use in vehicles as a separate audio system. Connecting the DARS unit to a car audio system may be a limiting factor for many consumers who may perceive the installation as an unwanted hassle. Once vehicles were made with a DARS system already installed, consumers may find much less resistance to the technology. (This is similar to the phenomenon of Music Choice's success on the DSS.)

This scenario is similar to the current development of the DSS. Most purchasers of the DSS must use an antenna or cable system to receive local TV stations. The DSS is used as a complementary system to receive satellite distributed programming. The DSS has been very successful during this early stage of adoption, and has attracted around one million subscribers. Even with its relatively high equipment costs

(when compared to TV antennas and cable TV), many consumers have adopted the service based on its wide variety of program options and digital signal.

Depending on the ability of DARS providers to focus attention on the objective and perceived attributes already discussed, even as a complementary service, DARS could be very successful in luring listeners away from terrestrial radio. If DARS installs easily at home or in a vehicle (or is already installed), and consumers can easily switch back and forth to terrestrial stations for personal service programming, there could be a significant amount of consumers interested in the service. If proper trialability and risk factors are addressed by the providers before the purchase, and price is value-oriented, the potential for DARS adoption is significant. The key is for the DARS providers to evaluate these product attributes in terms of the consumer. DSS providers have succeeded in this evaluation, and have significant numbers of DSS users. If DARS providers can do the same, the listener base for terrestrial radio could be diminished significantly, especially in those markets where there is little variety in the type and number of program formats.

References

Beacham, F. (1995, June). Satellite radio services are flying high with digital television uplinks. *The Radio World Magazine*, pp. 18-26.

Carlin, T. (1995). Examining the adoption potential of a new communication technology for the home: The case of the Digital Satellite System. A working paper to be presented at the COTIM National Convention in Newport, R.I., November 4, 1995.

Gatignon, H. and Robertson, T.S. (1985, March). A propositional inventory for new diffusion research. *Journal of Consumer Research*, 11:849-867.

Haber, A. (1995, February 8). FCC lays groundwork for satellite radio. *Radio World*, 11(3):1,12.

Holak, S.L. and Lehmann, D.R. (1990). Purchase intentions and the dimensions of innovation: An explanatory model. *Journal of Product Innovation*, 7:59-73.

Klopfenstein, B.C. (1989). Forecasting consumer adoption of information technology and services - lessons from home video forecasting. *Journal of the American Society for Information Science*, 40(1):17-26.

Rogers, E. (1986). *Communication technology: The new media in society*. New York: The Free Press.

7

Estimating The Impact Of Satellite Digital Audio Radio Service On The Existing Radio Market By Product Analogy and Consumer Demand Analysis

Ted Carlin, Ph.D.
Assistant Professor
TV/Radio Department
Shippensburg University
Shippensburg, PA 17257
(717) 532-1784 [office]
(717) 530-4013 [fax]

August 1995

THE FOUR SHARE WORLD

Presentation Slides From

Gerry Boehme

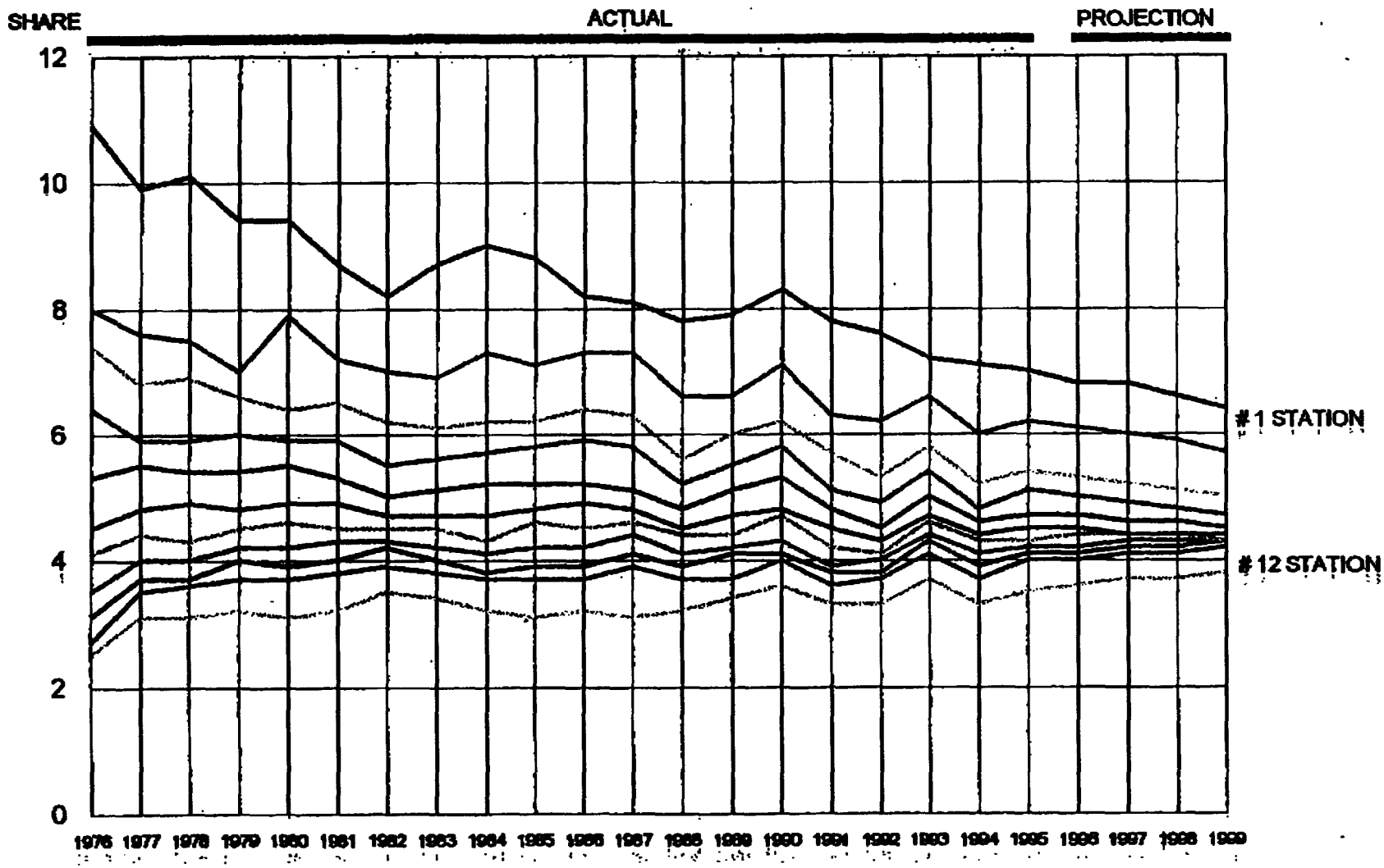
Sr. VP, Director of Research

Katz Radio Group

August 1995

PROJECTIONS OF AUDIENCE SHARES

PERSONS 12+ 6AM-12M 1996-1999 MARKETS 1-10 STATIONS 1-12



We used the least squares exponential curve to project our data. This formula offers a standard projection technique, accepted by virtually all statisticians and economists. In this type of projection it must be understood that a different station may be the #1, #2 etc. every year. We are dealing with the #1, #2, #3 stations position and not a particular station.

TRADITIONALLY, THE AVERAGE RADIO MARKET CONTAINED SEVERAL DOMINANT LEADERS, WITH OTHER STATIONS TRAILING WELL BACK IN THE PACK.

BEGINNING IN THE MID 70'S, HOWEVER, THE COMPETITIVE SITUATION CHANGED DRASTICALLY. TOP-RANKED STATIONS BEGAN TO LOSE 12+ SHARE, WHILE FORMER NON-FACTORS GAINED AUDIENCE IMPACT.

AS THE YEARS PASSED, THE AVERAGE MARKET BECAME MORE AND MORE FRACTIONALIZED. CURRENT TRENDS SUGGEST THAT RADIO HAS ENTERED A "FOUR-SHARE" WORLD, LEADING TO A MORE COMPLEX ENVIRONMENT.

BUSINESS SUCCESS IN THE 90'S WILL DEPEND ON A STATION'S ABILITY TO TAKE ADVANTAGE OF VARIOUS COMPETITIVE FACTORS AND EFFECTIVELY POSITION ITSELF TO LISTENERS AND ADVERTISERS.

MANY FACTORS PLAY A ROLE IN THIS NEW RADIO ENVIRONMENT:

- **SHIFTS IN U.S. LIFE-STYLES LEAD TO CHANGES IN LISTENER TASTES AND BEHAVIOR.**

- **MARKET INFLUENCES AFFECT THE PROGRAMMING AND SHARE POTENTIAL OF INDIVIDUAL RADIO STATIONS.**

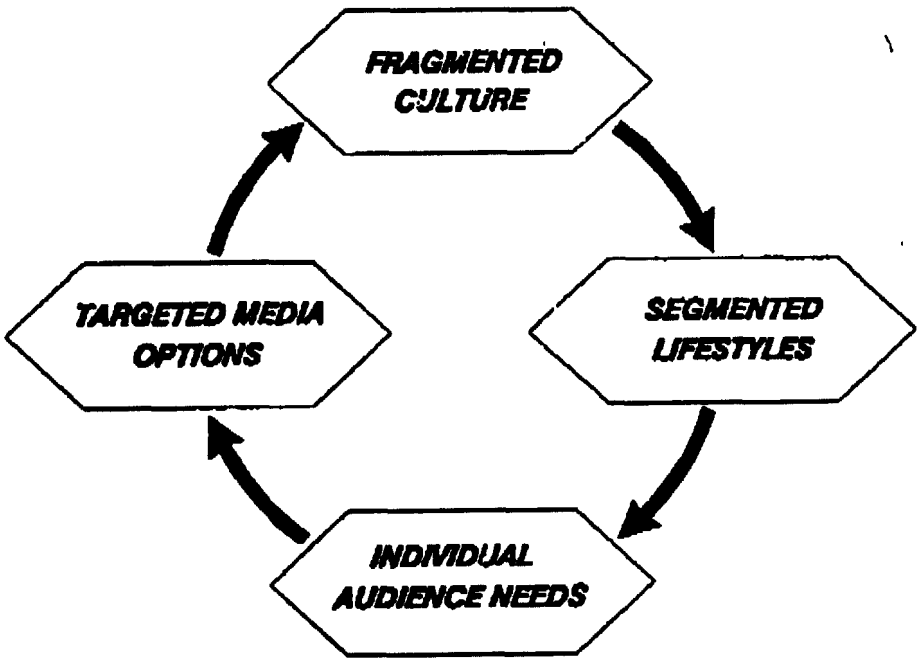
- **THE INCREASINGLY COMPETITIVE ADVERTISING ENVIRONMENT MAKES BUYING DECISIONS EVEN MORE COMPLEX.**

CHANGES IN THE U.S. LIFESTYLE

THE 1980'S SAW THE MYTH OF THE "AVERAGE AMERICAN" PUT TO REST. *AMERICAN CULTURE BECAME INCREASINGLY FRAGMENTED IN A MEGATREND PROCESS THAT JOHN NAISBITT CALLS "DECENTRALIZATION." THE TRADITIONAL MASS MARKET SPLIT APART, SHATTERED BY SUCH FACTORS AS:

- SHIFTING DEMOGRAPHICS (DIVORCE RATES, DOUBLE INCOMES)
- EMPHASIS ON INDIVIDUAL LIFE-STYLES (SINGLE PERSON HOUSEHOLDS)
- SHORT-LIVED SOCIAL TRENDS (URBAN COWBOY)
- BREAKDOWNS OF TRADITIONAL ROLES (WORKING WOMEN)

THE SEGMENTATION OF MULTI-MEDIA CHOICES REFLECTS THE U.S. POPULATION'S SEARCH FOR INFORMATION AND ENTERTAINMENT SERVICES TAILORED TO SPECIFIC INDIVIDUAL NEEDS. FURTHER SEGMENTATION LEADS TO EVEN HIGHER DESIRE FOR ADDITIONAL CHOICES, CREATING A CONTINUOUS CIRCLE OF SUPPLY AND DEMAND



*SOURCE:"THE CLUSTERING OF AMERICA" BY MICHAEL J. WEISS

MARKET INFLUENCES

RADIO PROGRAMING SHIFTED TO MEET THE NEEDS OF THE CHANGING U.S. MARKET. AS LISTENER TASTES DEVELOPED, RADIO STATIONS DEVELOPED STRATEGIES TO CREATE NEW OPPORTUNITIES.

FACTORS THAT HAVE INFLUENCED RADIO SINCE 1976 INCLUDE:

- THE GROWTH OF FM
- NEW FORMATS
- RADIO AS BIG BUSINESS
- NETWORKS/SATELLITE FORMATS/SYNDICATED PROGRAMS
- SOPHISTICATED RESEARCH/PROGRAMING CONSULTANTS
- NEW STATIONS